Illinois
Environmental
Protection Agency

Division of Land Pollution Control
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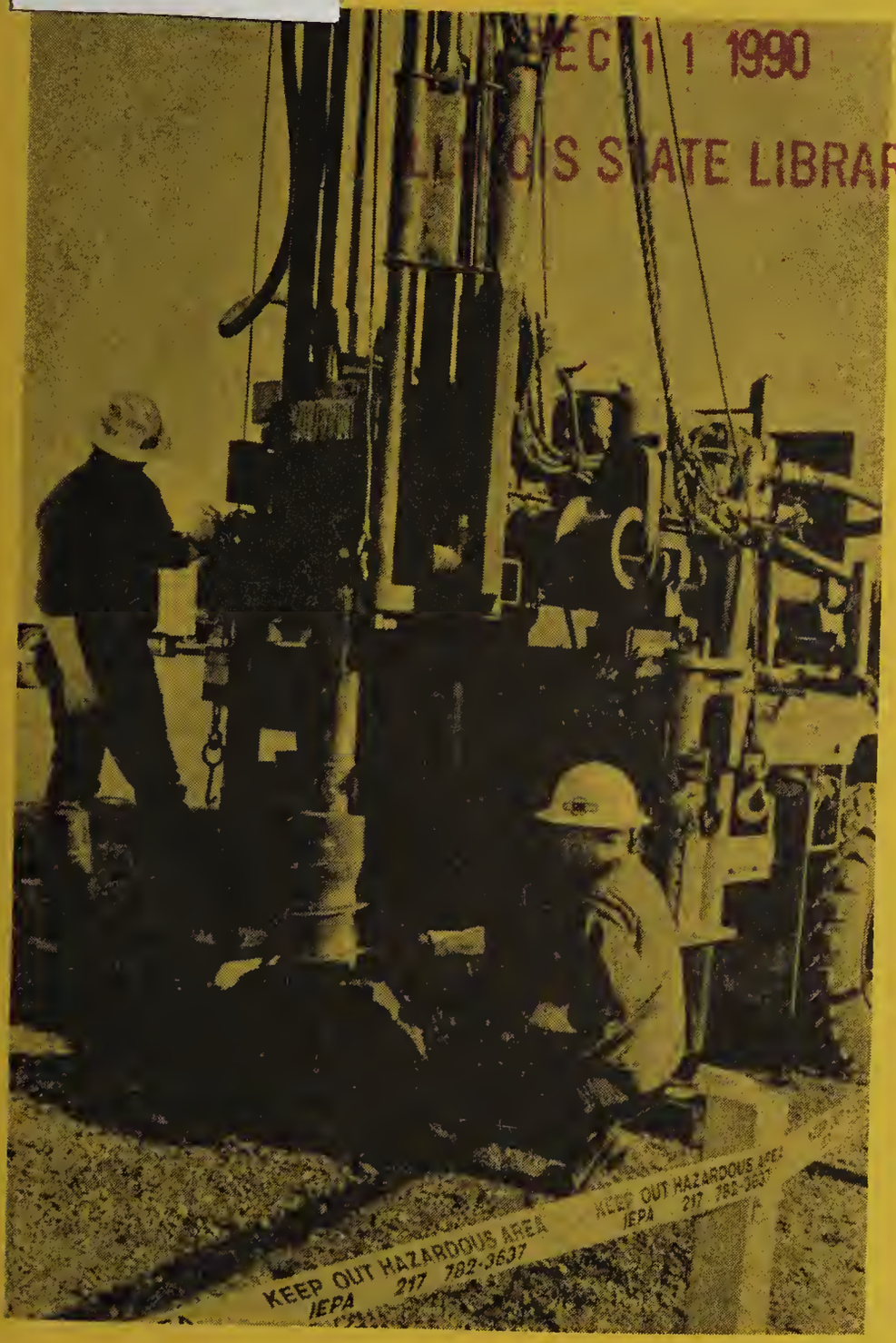

IEPA Drill Rig Unit

The Illinois Environmental Protection Agency's (IEPA) drilling program began with the purchase of a rig in 1977. The first projects utilizing the drill rig were in the evaluation and assessment of closed and covered dumps. In 1982 angle drilling capabilities were added to the rig. This new drilling technique made it possible to identify vertical fractures and determine the affects of fracturing on the permeability of natural clay liners. This technique was specifically used to study a leaking hazardous waste landfill in Wilsonville. The results of this study revolutionized the design of landfill liners and the construction of monitor wells.

As environmental awarness increased through the 80's the drill rig became a valuable tool in assessing land and groundwater contamination at state and federal Superfund sites. The rig was also used in obtaining supplemental information necessary for placing sites on the Superfund list.

With contamination of groundwater becoming a greater threat, the drill rig has and will continue to be used to identify the sources of these contaminants. One significant source of groundwater contamination is from leaking underground storage tanks. At the end of 1989, 2,155 incidents had been reported to the IEPA. Evaluating the extent of contamination from these sources will keep the Agency's rig working well into the future.

Drill Rig Services

- Soil Sampling
- Groundwater Sampling
- Monitor Well Installation
- Land Surveying

The Illinois Environmental Protection Agency's drilling fleet is fully equipped with all the tooling and equipment needed to do environmental investigations. The largest of the rigs has 8,450 foot pounds of torque with the potential to auger up to 300 or rotary drill, 1,650 feet below ground surface. Both drill rigs are set up for two types of drilling techniques; hollow stem auger and rock rotary.

Present Drilling Capabilities

Hollow Stem Auger

135 feet of 3 1/4 inch ID (inner diameter) by 7 1/4 inch OD (outer diameter)

100 feet of 3/ 3/4 inch ID by 7 3/4 inch OD

100 feet of 6 1/4 inch ID by 10 1/2 inch OD

50 feet of 8 1/4 inch ID by 11 5/8 inch OD

Rock Rotary

Rock roller bits are available in the following diameters; 3 inch, 5 5/8 inch, 6 1/4 inch and 7 7/8 inch. The 3 inch rock roller bit has a drill depth capability of 150 feet. With the 5 5/8 inch bit up to 7 7/8 inch, the rigs can rotary drill to 150 feet.

Sampling Capabilities

Unconsolidated sediments can be collected continuously or in discrete intervals. Continuous samplers are available in 3 inch x 5 foot, 3 1/2 inch x 5 foot and 6 inch x 5 foot sizes. These samplers are excellent for environmental investigations because they provide a continuous profile of the geologic materials. Sand seams and till

fractures can be easily identified by using this sampler. Conventional sampling tools available includes the standard lynac 2 inch x 18 inch split spoon and shelby tubes in 2 and 3 inch diameters.

Rock samples can be collected by using a 3 inch x 10 foot Christensen core barrel. Samples can be obtained to depths of 160 feet using AWJ rod and 110 feet using NW rod.

Special soil sampling techniques includes collecting samples for volatile organic analysis. Steel and brass insert liners are available for use in either the 3 1/2 inch x 5 foot continuous sampler or the standard lynac split spoon.

Groundwater sampling, using a special designed screened hollow stem lead auger, can be done while drilling. This technique has been successfully used to determine the vertical depth and horizontal extent of contamination.

Monitor Well Installation Capabilities

Monitor wells ranging from 2 inches up to 6 inches diameter can be installed with present drilling capabilities. Well casing materials of PVC and stainless steel are kept in stock at the IEPA warehouse. Hybrid wells can also be installed using PVC casing above the groundwater and stainless below.

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